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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b> <b>C12N 15/82, 9/00, 15/11, 7/00, C12Q 1/68, A01H 5/00</b>	<b>A2</b>	<b>(11) International Publication Number:</b> <b>WO 00/28057</b> <b>(43) International Publication Date:</b> 18 May 2000 (18.05.00)
<b>(21) International Application Number:</b> PCT/US99/26478 <b>(22) International Filing Date:</b> 9 November 1999 (09.11.99)  <b>(30) Priority Data:</b> 60/107,789 10 November 1998 (10.11.98) US  <b>(71) Applicants (for all designated States except US):</b> E.I. DU PONT DE NEMOURS AND COMPANY [US/US]; 1007 Market Street, Wilmington, DE 19898 (US). PIONEER HI-BRED INTERNATIONAL, INC. [US/US]; 7100 N.W. 62nd Avenue, Johnston, IA 50131 (US).  <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> FAMODU, Omolayo, O. [US/US]; 216 Barrett Run Place, Newark, DE 19702 (US). SIMMONS, Carl [US/US]; 4228 Holland Drive, Des Moines, IA 50310 (US).  <b>(74) Agent:</b> FEULNER, Gregory, J.; E.I. du Pont de Nemours and Company, Legal Patent Center, 1007 Market Street, Wilmington, DE 19898 (US).		<b>(81) Designated States:</b> AE, AL, AU, BA, BB, BG, BR, CA, CN, CR, CU, CZ, DM, EE, GD, GE, HR, HU, ID, IL, IN, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT, UA, US, UZ, VN, YU, ZA, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>Without international search report and to be republished upon receipt of that report.</i>
<b>(54) Title:</b> PLANT AMINOACYL-tRNA SYNTHETASES  <b>(57) Abstract</b>  This invention relates to an isolated nucleic acid fragment encoding an aminoacyl-tRNA synthetase. The invention also relates to the construction of a chimeric gene encoding all or a portion of the aminoacyl-tRNA synthetase, in sense or antisense orientation, wherein expression of the chimeric gene results in production of altered levels of the aminoacyl-tRNA synthetase in a transformed host cell.		

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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : C12N 15/82, 9/00, 15/11, 7/00, C12Q 1/68, A01H 5/00		A3	(11) International Publication Number: <b>WO 00/28057</b>
			(43) International Publication Date: 18 May 2000 (18.05.00)
(21) International Application Number: PCT US99 26478 (22) International Filing Date: 9 November 1999 (09.11.99) (30) Priority Data: 60 107,789 10 November 1998 (10.11.98) US (71) Applicants (for all designated States except US): E.I. DU PONT DE NEMOURS AND COMPANY [US/US]; 1007 Market Street, Wilmington, DE 19898 (US); PIONEER HI-BRED INTERNATIONAL, INC. [US/US]; 7100 N.W. 62nd Avenue, Johnston, IA 50131 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): FAMODU, Omolayo. O. [US/US]; 216 Barrett Run Place, Newark, DE 19702 (US); SIMMONS, Carl [US/US]; 4228 Holland Drive, Des Moines, IA 50310 (US). (74) Agent: FEULNER, Gregory, J.; E.I. du Pont de Nemours and Company, Legal Patent Center, 1007 Market Street, Wilmington, DE 19898 (US).		(81) Designated States: AE, AL, AU, BA, BB, BG, BR, CA, CN, CR, CU, CZ, DM, EE, GD, GE, HR, HU, ID, IL, IN, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT, UA, US, UZ, VN, YU, ZA, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report (88) Date of publication of the international search report: 23 November 2000 (23.11.00)	
(54) Title: PLANT AMINOACYL-tRNA SYNTHETASES (57) Abstract <p>This invention relates to an isolated nucleic acid fragment encoding an aminoacyl-tRNA synthetase. The invention also relates to the construction of a chimeric gene encoding all or a portion of the aminoacyl-tRNA synthetase, in sense or antisense orientation, wherein expression of the chimeric gene results in production of altered levels of the aminoacyl-tRNA synthetase in a transformed host cell.</p>			

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# INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 99/26478

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/82 C12N9/00 C12N15/11 C12N7/00 C12Q1/68  
A01H5/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N C12Q A01H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

BIOSIS, CHEM ABS Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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X	<p>SASAKI, T.: DATABASE DBEST ID:36698, 2 December 1993 (1993-12-02), XP002136610</p> <p>the whole document &amp; EMBL ACCESSION NO:D23310, 28 November 1993 (1993-11-28).</p>	<p>1,3,5-8, 10,44, 45,47, 51-53</p>
X	<p>SASAKI, T.: DATABASE DBEST ID:23829, 17 May 1993 (1993-05-17), XP002136611</p> <p>the whole document &amp; EMBL ACCESSION NO:D16052, 19 May 1993 (1993-05-19).</p>	<p>1,3,5-8, 10,44, 45,47, 51-53</p>

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☒ Further documents are listed in the continuation of box C

☒ Patent family members are listed in annex

### \* Special categories of cited documents :

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Date of the actual completion of the international search

2 August 2000

Date of mailing of the international search report

16.08.00

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Inter. App. Application No

PCT/US 99/26478

## C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication where appropriate, of the relevant passages	Relevant to claim No.
X	ANDERSEN, R.V.: "H.vulgare mRNA for L-Glutamate:tRNA-Glu ligase" EMBL ACCESSION NO: X83523. 21 December 1994 (1994-12-21), XP002136617 the whole document & SWISSPROT ACCESSION NO: Q43768. 1 November 1997 (1997-11-01). ---	11. 13-18. 20,44. 45,47. 50-53
X	SASAKI, T: DATABASE DBEST ID: 1195296. 6 August 1997 (1997-08-06), XP002144135  the whole document & SASAKI, T., ET AL.: "Rice cDNA, partial sequence (C50983_2A)." EMBL ACCESSION NO: C27100. 6 August 1997 (1997-08-06). ---	11. 13-18. 20,44. 45,47. 50-53
X	ANDERSEN, R.V., ET AL.: "N.tabacum mRNA for L-Glutamate:tRNA-Glu ligase" EMBL ACCESSION NO: X83524. 21 December 1994 (1994-12-21), XP002136618 the whole document & SWISSPROT ACCESSION NO: Q43794, 1 November 1997 (1997-11-01), ---	11. 13-18. 20,44. 45,47. 50,53
X	RACHER K I ET AL: "EXPRESSION AND CHARACTERIZATION OF A RECOMBINANT YEAST ISOLEUCYL-TRANSFER RNA SYNTHETASE" JOURNAL OF BIOLOGICAL CHEMISTRY 1991, vol. 266, no. 26, 1991, pages 17158-17164, XP002136612 ISSN: 0021-9258 the whole document ---	46
X	EP 0 835 936 A (SMITHKLINE BEECHAM PLC :SMITHKLINE BEECHAM CORP (US)) 15 April 1998 (1998-04-15) the whole document ---	46
P,X	WALBOT, V., ET AL.: "605010D08.y1 605 - Endosperm cDNA library from Schmidt lab Zea mays cDNA, mRNA sequence." EMBL ACCESSION NO: A1795505, 4 July 1999 (1999-07-04), XP002136613 the whole document ---	1,3,52
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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/26478

## C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category: Citation of document, with indication where appropriate, of the relevant passages Relevant to claim No.

P.X	WALBOT, V.: "605028D01.x1 605 - Endosperm cDNA library from Schmidt lab Zea mays cDNA, mRNA sequence." EMBL ACCESSION NO:AI667809. 17 May 1999 (1999-05-17), XP002144136 the whole document	11. 13-18. 20,44. 45,47. 50-53
P.X	WING, R.A., ET AL.: "nbxb0083M08f CUGI Rice BAC Library Oryza sativa genomic clone nbxb0083M08f, genomic survey sequence." EMBL ACCESSION NO:A0574177. 3 June 1999 (1999-06-03), XP002144137 the whole document	52
P.X	SHOEMAKER, R., ET AL.: "sb97d10.y1 Gm-cl012 Glycine max cDNA clone GENOME SYSTEMS CLONE ID:Gm-cl012-620 5' similar to SW:SYE_TOBAC Q43794 GLUTAMYL-TRNA SYNTHETASE : ,mRNA sequence." EMBL ACCESSION NO:AI899999. 28 July 1999 (1999-07-28), XP002144138 the whole document	11. 13-18. 20,44. 45,47. 50-53
A	SMALL, I.D.: "Arabidopsis thaliana gene encoding arginyl-tRNA synthetase, clone G7" EMBL ACCESSION NO:Z98760. 18 November 1997 (1997-11-18), XP002136614 the whole document & TREMBL ACCESSION NO:023247, 1 January 1998 (1998-01-01),	1-10
A	SMALL, I.D.: "Arabidopsis thaliana gene encoding arginyl-tRNA synthetase, clone G6" EMBL ACCESSION NO:Z98759. 18 November 1997 (1997-11-18), XP002136615 the whole document & TREMBL ACCESSION NO:023246, 1 January 1998 (1998-01-01),	1-10

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## INTERNATIONAL SEARCH REPORT

Inter. Nat. Application No

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C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category: Citation of document, with indication, where appropriate, of the relevant passages

Relevant to claim No

- |   |  |                              |
|---|--|------------------------------|
| A | <p>DATABASE CHEMABS 'Online!<br/>           CHEMICAL ABSTRACTS SERVICE, COLUMBUS,<br/>           OHIO, US;<br/>           JOACHIMIAK, A. ET AL: "Heparin - Sepharose<br/>           column chromatography as a new method for<br/>           the purification of aminoacyl- tRNA<br/>           synthetases"<br/>           retrieved from STN<br/>           Database accession no. 94:134720 CA<br/>           XP002136622<br/>           abstract<br/>           &amp; J. CHROMATOGR. (1981), 206(3), 600-5 .<br/>           1981.</p>  | 10,46                        |
| A | <p>---<br/>           DATABASE BIOSIS 'Online!<br/>           BIOSCIENCES INFORMATION SERVICE,<br/>           PHILADELPHIA, PA, US; 1981<br/>           JOACHIMIAK A ET AL: "METHOD FOR ISOLATION<br/>           OF AMINOACYL TRANSFER RNA SYNTHETASES<br/>           EC-6.1.1.- FROM PLANTS PURIFICATION AND<br/>           SOME PROPERTIES OF METHIONYL PHENYL ALANYL<br/>           AND ARGINYL TRANSFER RNA SYNTHETASES FROM<br/>           YELLOW LUPINE LUPINUS-LUTEUS SEEDS"<br/>           Database accession no. PREV198172059433<br/>           XP002136623<br/>           abstract<br/>           &amp; INTERNATIONAL JOURNAL OF BIOLOGICAL<br/>           MACROMOLECULES 1981,<br/>           vol. 3, no. 2, 1981, pages 121-128,<br/>           ISSN: 0141-8130</p> | 10                           |
| A | <p>---<br/>           DAY, I.S., ET AL.: "Arabidopsis thaliana<br/>           glutamyl-tRNA synthetase mRNA, complete<br/>           cds."<br/>           EMBL ACCESSION NO:AF067773,<br/>           21 August 1998 (1998-08-21), XP002136616<br/>           the whole document<br/>           &amp; BIOCHIM: BIOPHYS. ACTA<br/>           1399(2-3):219-224(1998).,<br/>           20 August 1998 (1998-08-20),<br/>           &amp; TREMBL ACCESSION NO:082462,<br/>           1 November 1998 (1998-11-01).</p>   | 11-20                        |
| A | <p>---<br/>           WO 97 38718 A (SMITHKLINE BEECHAM PLC<br/>           :LAWLOR ELIZABETH JANE (US); SMITHKLINE<br/>           BEE) 23 October 1997 (1997-10-23)<br/>           the whole document</p>  | 11-20,<br>41-46,<br>48.51-57 |
| A | <p>---<br/>           EP 0 785 261 A (SMITHKLINE BEECHAM PLC)<br/>           23 July 1997 (1997-07-23)<br/>           the whole document</p>   | 11-20,<br>41-46,<br>48.51-57 |

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/26478

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication where appropriate, of the relevant passages	Relevant to claim No
A	<p>AKASHI, K., ET AL.: "O.sativa mRNA histidyl tRNA synthetase"                      EMBL ACCESSION NO:Z85984.                      13 February 1997 (1997-02-13).                      XP002136619                      -&amp; A CDNA CLONE ENCODING RICE                      HISTIDYL-TRNA SYNTHETASE (ACCESSION NO.                      Z85984)(PGR97-062)PLANT PHYSIOL.                      113:1464-1464(1997)..                      XP002136620</p>	
A	<p>AKASHI, K., ET AL.: "Potential dual                      targeting of an Arabidopsis                      archaeobacterial-like histidyl-tRNA                      synthetase to mitochondria and                      chloroplasts"                      FEBS LETTERS.                      vol. 431, no. 1.                      10 July 1998 (1998-07-10), pages 39-44.                      XP002136621                      &amp; AKASHI, K., ET AL.: "Arabidopsis                      thaliana histidyl-tRNA synthetase mRNA.                      complete cds."                      EMBL ACCESSION NO:AF020715,                      28 September 1998 (1998-09-28),</p>	

# INTERNATIONAL SEARCH REPORT

national application No  
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## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos. \_\_\_\_\_  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos. \_\_\_\_\_  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful international Search can be carried out, specifically:
3. ☐ Claims Nos. \_\_\_\_\_  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:  
11-30, 48, 49 all completely, and 1-10, 41-47, 51-57 all partially representing groups 1, 5, 6, 7, and 8
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-10,41-47,51-57 all partially

Polynucleotide sequence encoding corn arginyl-tRNA synthetase as represented by SEQ ID NOS:1 and 2 or encoding sequences with at least 80% identity to SEQ ID NO:2, polypeptides with at least 80% identity to SEQ ID NO:2, expression cassettes, host cells and positive selection methods based on said sequences, methods for selecting and obtaining aminoacyl-tRNA synthetases and evaluating compounds for the ability to inhibit aminoacyl-tRNA synthetases based on said sequences and also SEQ ID NOS:23 and 24, polynucleotides comprising at least 30 consecutive nucleotides of SEQ ID NOS:1 or 23

2. Claims: 1-10,41-47,51-57 all partially

Polynucleotide sequence encoding rice arginyl-tRNA synthetase as represented by SEQ ID NOS:3 and 4 or encoding sequences with at least 80% identity to SEQ ID NO:4, polypeptides with at least 80% identity to SEQ ID NO:4, expression cassettes, host cells and positive selection methods based on said sequences, methods for selecting and obtaining aminoacyl-tRNA synthetases and evaluating compounds for the ability to inhibit aminoacyl-tRNA synthetases based on said sequences and also SEQ ID NOS:25 and 26, polynucleotides comprising at least 30 consecutive nucleotides of SEQ ID NOS:3 or 25

3. Claims: 1-10,41-47,51-57 all partially

Polynucleotide sequence encoding soybean arginyl-tRNA synthetase as represented by SEQ ID NOS:5 and 6 or encoding sequences with at least 80% identity to SEQ ID NO:6, polypeptides with at least 80% identity to SEQ ID NO:6, expression cassettes, host cells and positive selection methods based on said sequences, methods for selecting and obtaining aminoacyl-tRNA synthetases and evaluating compounds for the ability to inhibit aminoacyl-tRNA synthetases based on said sequences and also SEQ ID NOS:27 and 28, polynucleotides comprising at least 30 consecutive nucleotides of SEQ ID NOS:5 or 27

4. Claims: 1-10,41-47,51-57 all partially

Polynucleotide sequence encoding wheat arginyl-tRNA synthetase as represented by SEQ ID NOS:7 and 8 or encoding sequences with at least 80% identity to SEQ ID NO:8, polypeptides with at least 80% identity to SEQ ID NO:8, expression cassettes, host cells and positive selection

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

methods based on said sequences, methods for selecting and obtaining aminoacyl-tRNA synthetases and evaluating compounds for the ability to inhibit aminoacyl-tRNA synthetases based on said sequences and also SEQ ID NOS:29 and 30, polynucleotides comprising at least 30 consecutive nucleotides of SEQ ID NOS:7 or 29

## 5. Claims: 11-20, 41-46, 48, 51-57 all partially

Polynucleotide sequence encoding corn glutamyl-tRNA synthetase as represented by SEQ ID NOS:9 and 10 or encoding sequences with at least 90% identity to SEQ ID NOS:10, polypeptides with at least 90% identity to SEQ ID NOS:10, expression cassettes, host cells and positive selection methods based on said sequences, methods for selecting and obtaining aminoacyl-tRNA synthetases and evaluating compounds for the ability to inhibit aminoacyl-tRNA synthetases based on said sequences, polynucleotides comprising at least 30 consecutive nucleotides of SEQ ID NOS:9

## 6. Claims: 11-20, 41-46, 48, 51-57 all partially

Polynucleotide sequence encoding rice glutamyl-tRNA synthetase as represented by SEQ ID NOS:11 and 12 or encoding sequences with at least 90% identity to SEQ ID NOS:12, polypeptides with at least 90% identity to SEQ ID NOS:12, expression cassettes, host cells and positive selection methods based on said sequences, methods for selecting and obtaining aminoacyl-tRNA synthetases and evaluating compounds for the ability to inhibit aminoacyl-tRNA synthetases based on said sequences and also SEQ ID NOS:31 and 32, polynucleotides comprising at least 30 consecutive nucleotides of SEQ ID NOS:11 and 31

## 7. Claims: 11-20, 41-46, 48, 51-57 all partially

Polynucleotide sequence encoding soybean glutamyl-tRNA synthetase as represented by SEQ ID NOS:13 and 14 or encoding sequences with at least 90% identity to SEQ ID NOS:14, polypeptides with at least 90% identity to SEQ ID NOS:14, expression cassettes, host cells and positive selection methods based on said sequences, methods for selecting and obtaining aminoacyl-tRNA synthetases and evaluating compounds for the ability to inhibit aminoacyl-tRNA synthetases based on said sequences and also SEQ ID NOS:33 and 34, polynucleotides comprising at least 30 consecutive nucleotides of SEQ ID NOS:13 and 33

## 8. Claims: 21-30, 49 all completely, and 41-46, 51-57 all partially

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Polynucleotide sequence encoding wheat glutamyl-tRNA synthetase as represented by SEQ ID NOS:15 and 16 or encoding sequences with at least 80% identity to SEQ ID NO:16, polypeptides with at least 80% identity to SEQ ID NO:16, expression cassettes, host cells and positive selection methods based on said sequences, methods for selecting and obtaining aminoacyl-tRNA synthetases and evaluating compounds for the ability to inhibit aminoacyl-tRNA synthetases based on said sequences, polynucleotides comprising at least 30 consecutive nucleotides of SEQ ID NO:15.

## 9. Claims: 31-46, 50-57 all partially

Polynucleotide sequence encoding corn histidyl-tRNA synthetase as represented by SEQ ID NOS:17 and 18 or encoding sequences with at least 90% identity to SEQ ID NO:18, polypeptides with at least 90% identity to SEQ ID NO:18, expression cassettes, host cells and positive selection methods based on said sequences, methods for selecting and obtaining aminoacyl-tRNA synthetases and evaluating compounds for the ability to inhibit aminoacyl-tRNA synthetases based on said sequences, polynucleotides comprising at least 30 consecutive nucleotides of SEQ ID NO:17.

## 10. Claims: 31-46, 50-57 all partially

Polynucleotide sequence encoding soybean histidyl-tRNA synthetase as represented by SEQ ID NOS:19 and 20 or encoding sequences with at least 90% identity to SEQ ID NO:20, polypeptides with at least 90% identity to SEQ ID NO:20, expression cassettes, host cells and positive selection methods based on said sequences, methods for selecting and obtaining aminoacyl-tRNA synthetases and evaluating compounds for the ability to inhibit aminoacyl-tRNA synthetases based on said sequences and also SEQ ID NOS:35 and 36, polynucleotides comprising at least 30 consecutive nucleotides of SEQ ID NOS:19 and 35

## 11. Claims: 31-46, 50-57 all partially

Polynucleotide sequence encoding wheat histidyl-tRNA synthetase as represented by SEQ ID NOS:21 and 22 or encoding sequences with at least 90% identity to SEQ ID NO:22, polypeptides with at least 90% identity to SEQ ID NO:22, expression cassettes, host cells and positive selection methods based on said sequences, methods for selecting and obtaining aminoacyl-tRNA synthetases and evaluating compounds for the ability to inhibit aminoacyl-tRNA

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

synthetases based on said sequences and also SEQ ID NOS:37  
and 38. polynucleotides comprising at least 30 consecutive  
nucleotides of SEQ ID NOS:21 and 37

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/26478

Patent document cited in search report		Publication date	Patent family members		Publication date
EP 0835936	A	15-04-1998	JP	11098983 A	13-04-1999
WO 9738718	A	23-10-1997	EP	0904103 A	31-03-1999
EP 0785261	A	23-07-1997	WO	9726345 A	24-07-1997
			JP	11503331 T	26-03-1999

